

Green
#9

① $f(x) = \frac{3x}{x^2 - x - 2}$

- $3x = 0$, x -int is zero
- $x^2 - x - 2$
 $(x-2)(x+1)$
 $x = 2, -1$ are vert asympt.
- $y = 0$ ^{horiz.} asympt. (3 rules)
- plug in zero, y -int = 0

⑥

- zeros of top $\Rightarrow x$ -int
- zeros of bottom \Rightarrow vert. asympt.
- 3 rules p. 144 \Rightarrow horiz. asympt.
- plug in zero for $x \Rightarrow y$ -int
- slant: if top degree is one more than bottom, long divide

$$\frac{3x^2 + 3x - 5}{2x^2 + 3} \Rightarrow \begin{array}{l} \text{horiz.} \\ \text{asympt.} \\ y = \frac{3}{2} \end{array}$$

$$\textcircled{1} f(x) = \frac{x^3}{2x^2 - 8}$$

- $x^3 = 0$, $x = 0$
 x -int is zero
- zeros of bottom
 $2x^2 - 8 = 0$
 $x^2 = 4$
 $x = \pm 2 \rightarrow$ vert. asympt.

• No horiz. asympt.

• plug in zero, y -int = 0

Slant asymptote

$$2x^2 + 0x - 8 \overline{) x^3 + 0x^2 + 0x + 0}$$

$\frac{4x}{2x^2 - 8}$

$$\underline{x^3 + 0x^2 - 4x}$$

$$4x + 0$$

$$\text{Slant} \Rightarrow y = \frac{1}{2}x$$

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#11a

$$f(x) = x^5 + x^3 + 2x^2 - 12x + 8$$

$$\frac{\pm 1, \pm 2, \pm 4, \pm 8}{1}$$

$$\begin{array}{r|rrrrrr} 1 & 1 & 0 & 1 & 2 & -12 & 8 \\ & & 1 & 1 & 2 & 4 & -8 \\ \hline & 1 & 1 & 2 & 4 & -8 & 0 \end{array}$$

1 is a zero, $(x-1)$ is factor

1 is a zero, $(x-1)$ is factor

-2 is a zero $(x+2)$ is factor

$\pm 2i$ is a zero, $(x-2i)(x+2i)$

$$\begin{array}{r|rrrrr} 1 & 1 & 1 & 2 & 4 & -8 \\ & & 1 & 2 & 4 & 8 \\ \hline & 1 & 2 & 4 & 8 & 0 \end{array}$$

Zeros $1, 1, -2, -2i, 2i$
Factors $(x-1)(x-1)(x+2)(x-2i)(x+2i)$

$$\begin{array}{r|rrrr} -2 & 1 & 2 & 4 & 8 \\ & & -2 & 0 & -8 \\ \hline & 1 & 0 & 4 & \end{array}$$

$$x^2 + 4 = 0$$

$$x^2 = -4 \quad x = \pm 2i$$

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7c

$$f(x) = 3x^2 + 1$$

$$x = 3y^2 + 1$$

$$-1 \quad -1$$

$$\frac{x-1}{3} = \frac{3y^2}{3}$$

$$\frac{x-1}{3} = y^2$$

$\sqrt{\quad}$
 $\sqrt{\quad}$

$$\pm \sqrt{\frac{x-1}{3}} = y$$



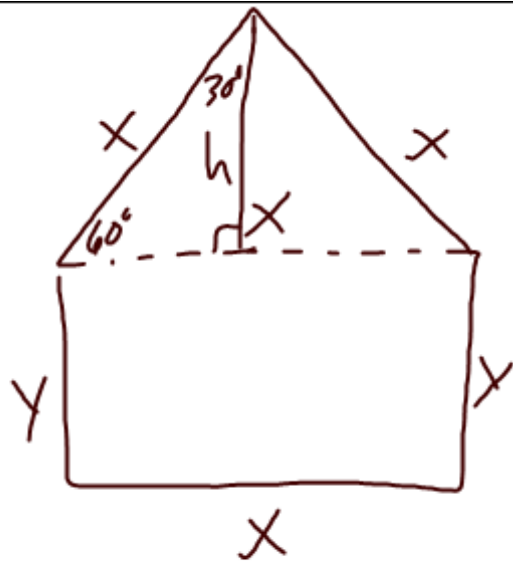
$$g(x) = \sqrt{3x-2}$$

$$3x-2=0$$

$$3x=2$$

$$x = \frac{2}{3} \quad x \geq \frac{2}{3}$$





$$\text{Area} = xy + \frac{1}{2}x \cdot h$$

$$\text{Area} = x\left(\frac{16-3x}{2}\right) + \frac{1}{2}x \cdot h$$

$$\sin 60 = \frac{h}{x} \Rightarrow x \sin 60 = h$$

$$\underline{\underline{x \cdot \frac{\sqrt{3}}{2} = h}}$$

$$16 = 3x + 2y$$

$$\frac{16-3x}{2} = y$$

$$\text{Area} = x\left(\frac{16-3x}{2}\right) + \frac{1}{2}x\left(x \frac{\sqrt{3}}{2}\right)$$